NMOS Control & Monitoring

An Open Solution

Cristian Recoseanu – Tech Lead @ Pebble

Tech Lead for IS-12, BCP-008

NMOS

What NMOS is

What:

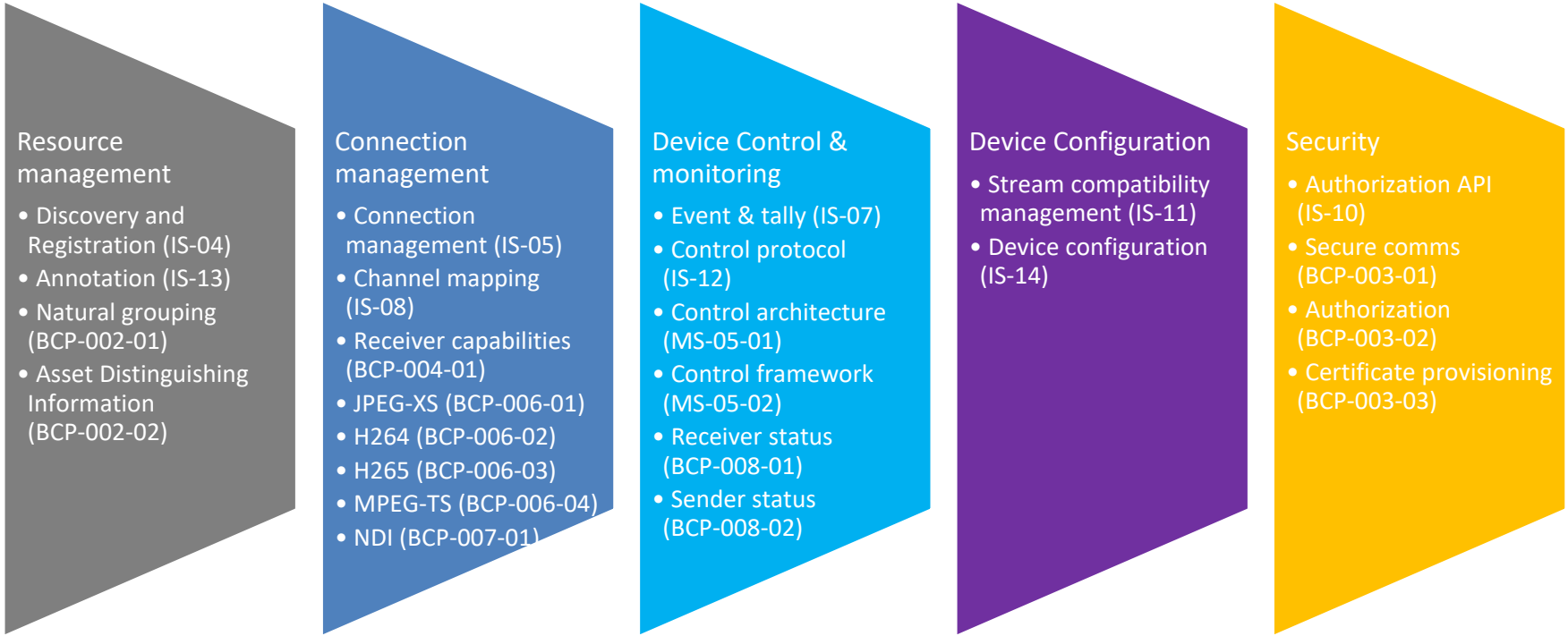
A family of open, free of charge specifications that enable interoperability between media devices on an IP infrastructure.

Why:

Enables end-users and SIs to create best of breed solutions from a greater pool of vendors which interoperate at different layers

NMOS “layers”

Roadmap Specs

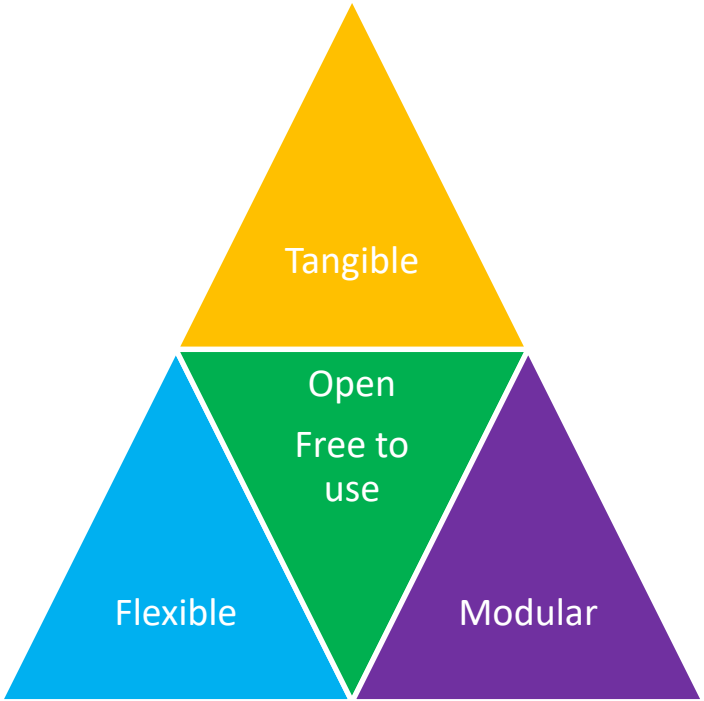


NMOS C&M - An Open Solution

Establishes a standard, interoperable vision, philosophy and platform for device control and monitoring within the NMOS ecosystem and community.

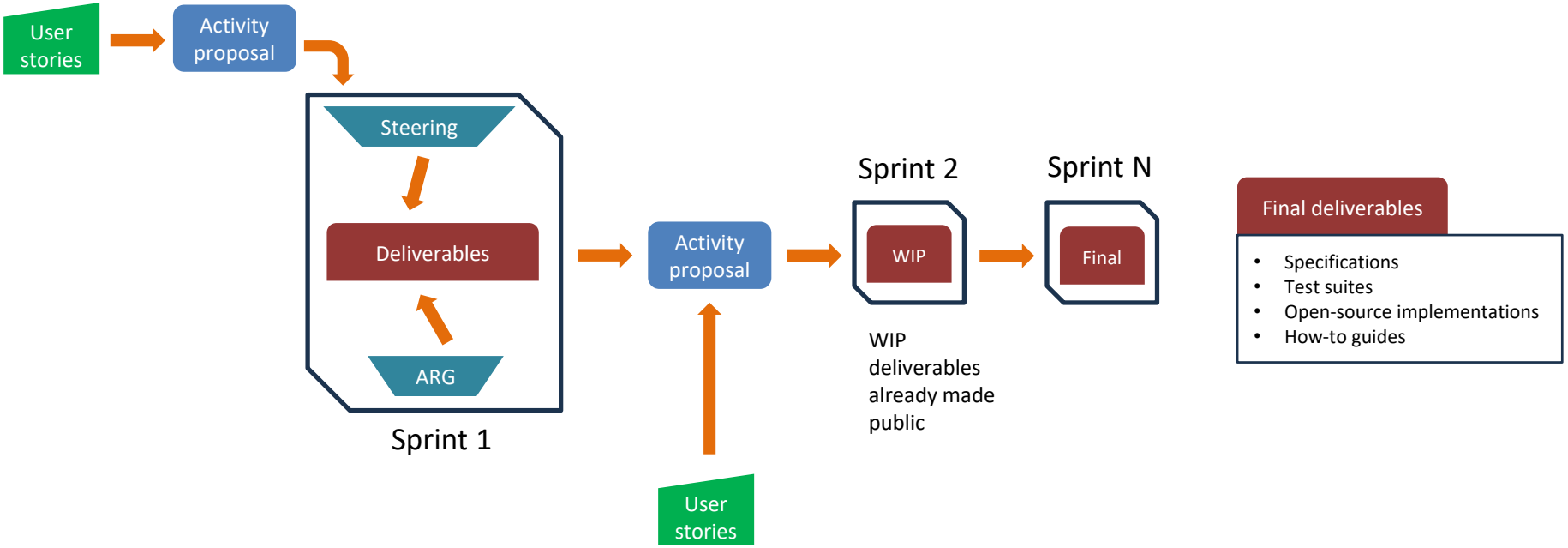
- Secure by design with BCP-003 and IS-10 specifying the requirements
- Architecture and roadmap are governed not by a single entity but by the NMOS community
- Benefits from interoperability testing within the NMOS ecosystem
- Benefits from a forum where vendors, end users and integrators can provide feedback about any concerns/improvements/integration issues they may have

Distinguishing attributes

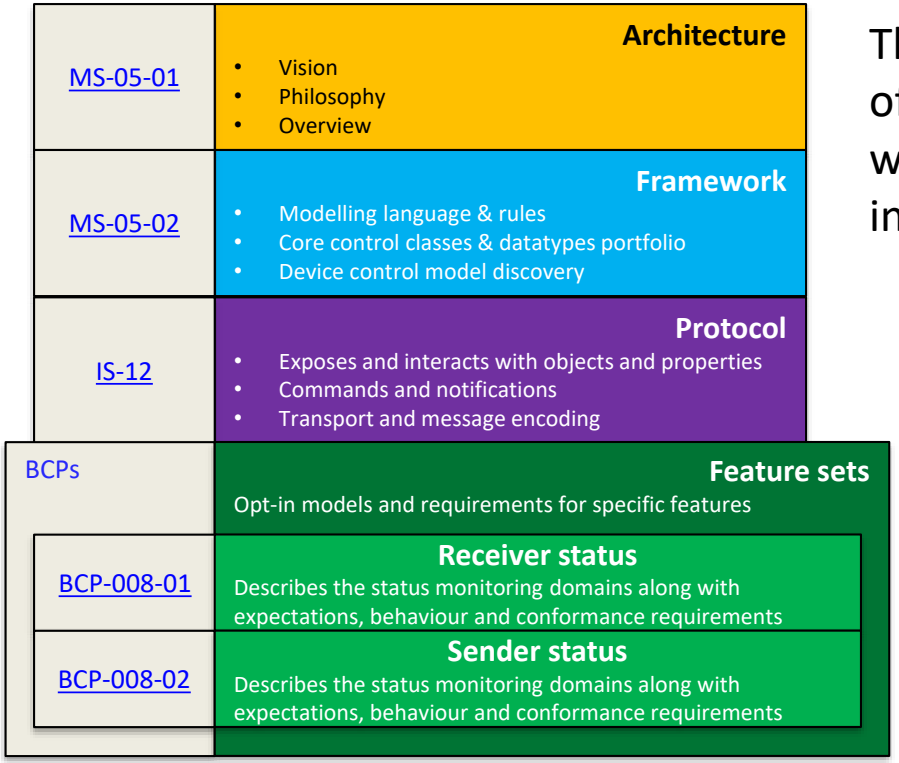


Open

A truly open solution every step of the way.

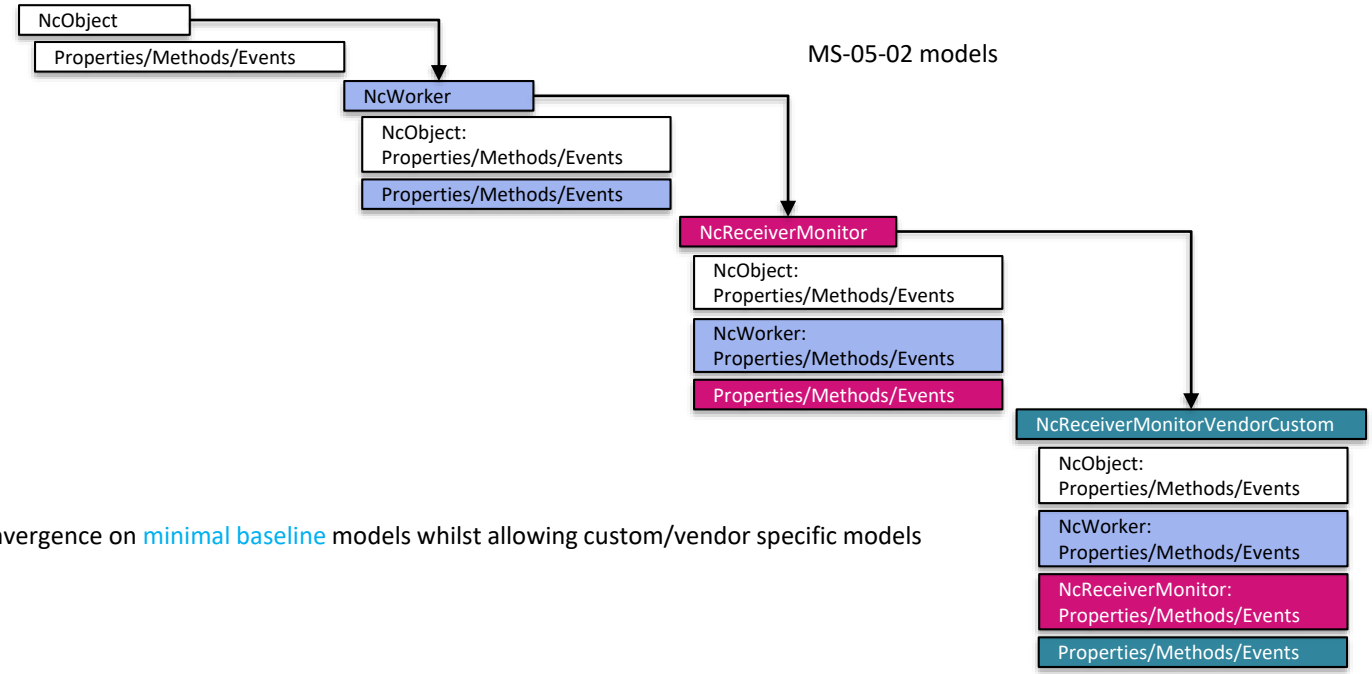


Flexible



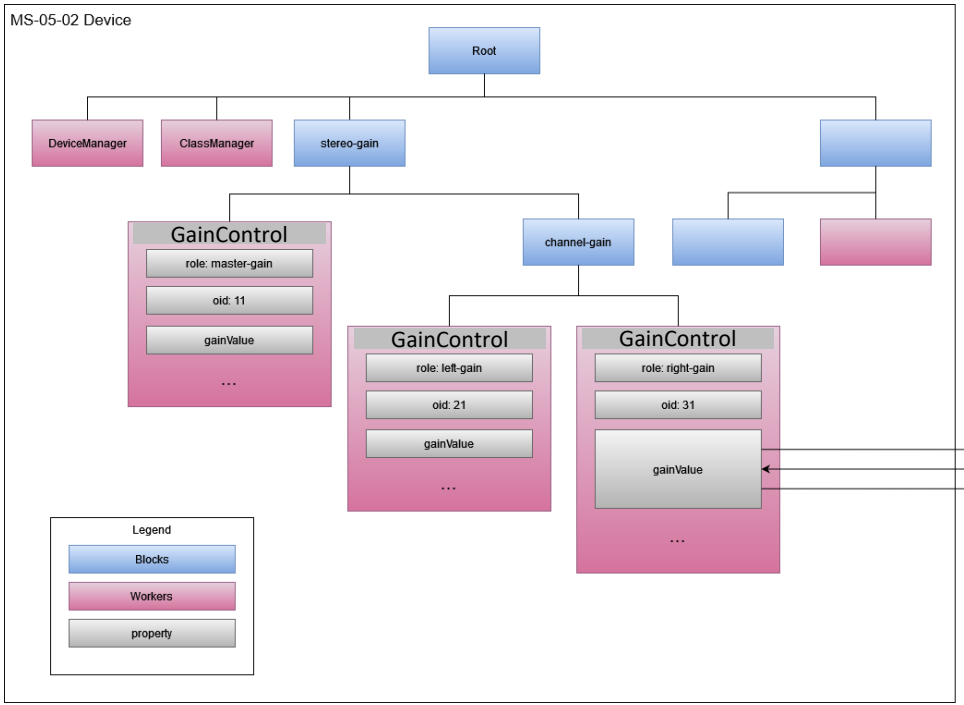
The problem space is explored at different levels offering the optimal amount of standardization whilst maintaining vendor freedom and ensuring interoperability.

Flexible

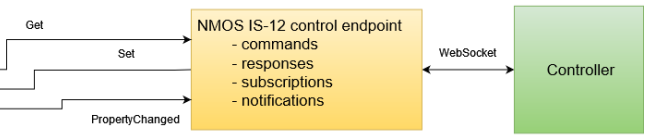


Convergence on minimal baseline models whilst allowing custom/vendor specific models

Flexible

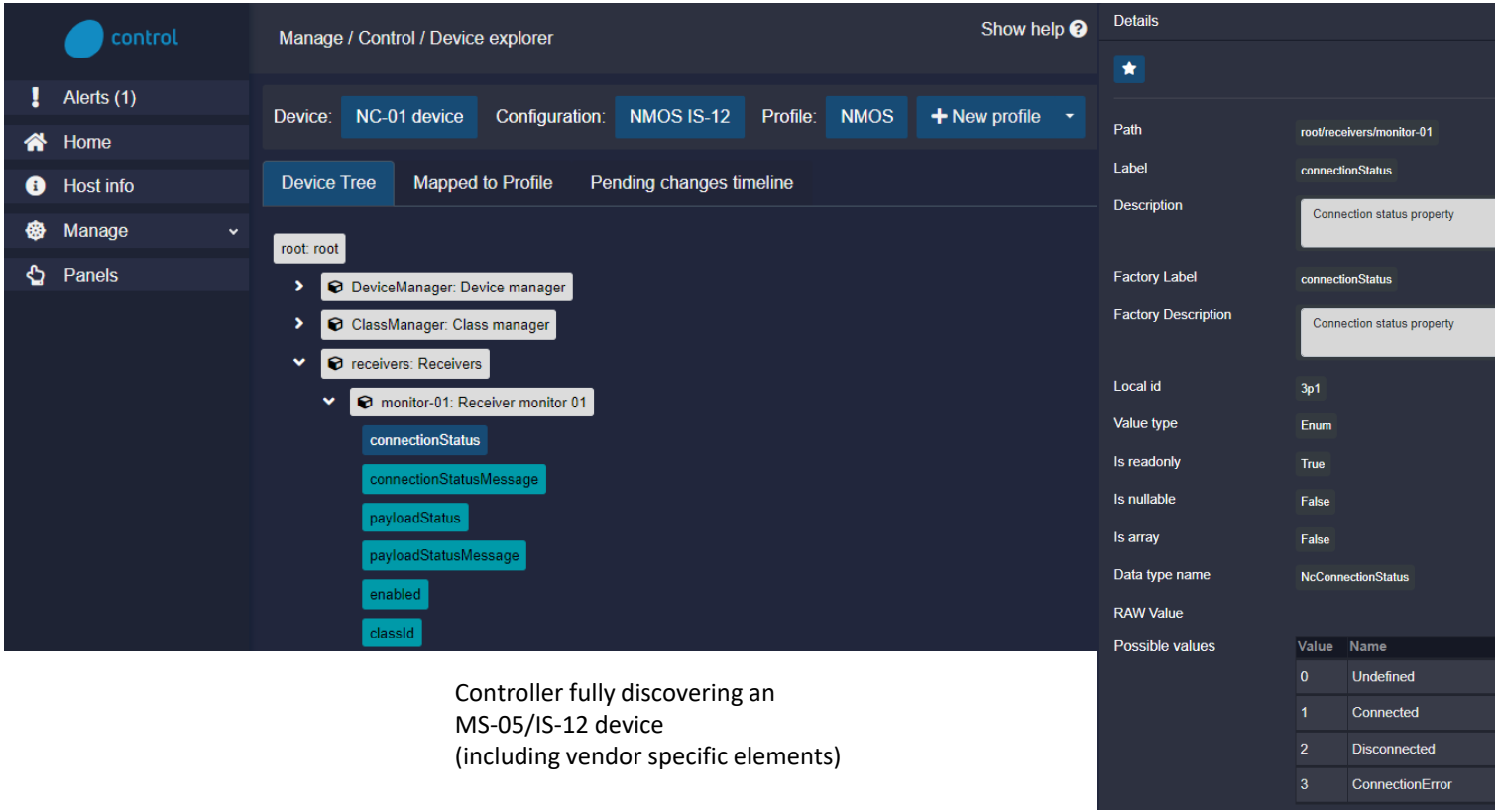


IS-12 messages are compact but still readable



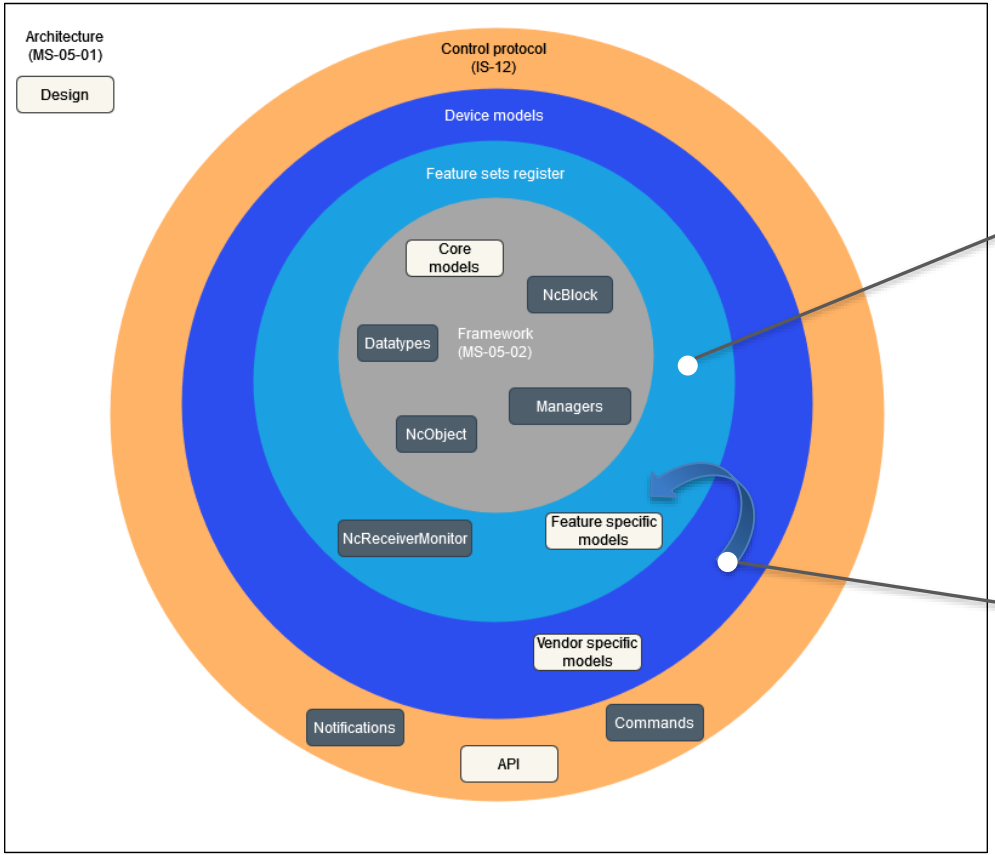
Convergence on the protocol

Flexible



Controller fully discovering an
MS-05/IS-12 device
(including vendor specific elements)

Flexible



More convergence around common feature models with **direct vendor and end user involvement**

Vendors propose existing vendor specific models for registration as a common feature set

Tangible

- All the deliverables end up in the public domain on GitHub

- WIP versions of the specifications are available publicly on GitHub from the very first few sprints

Tangible

- MS-05-01: NMOS Control Architecture
  https://specs.amwa.tv/ms-05-01/
- MS-05-02: NMOS Control Framework
  https://specs.amwa.tv/ms-05-02/
- IS-12: NMOS Control Protocol
  https://specs.amwa.tv/is-12/
- BCP-008-01: Receiver status
  https://specs.amwa.tv/bcp-008-01/
- BCP-008-02: Sender status
  https://specs.amwa.tv/bcp-008-02/

Tangible

Developer resources and tools:

- INFO-006: Implementation guide for NMOS Device Control
  https://specs.amwa.tv/info-006/
- NMOS Device control mock
  https://github.com/AMWA-TV/nmos-device-control-mock
- nmos-cpp: Open-source node implementation
  https://github.com/sony/nmos-cpp

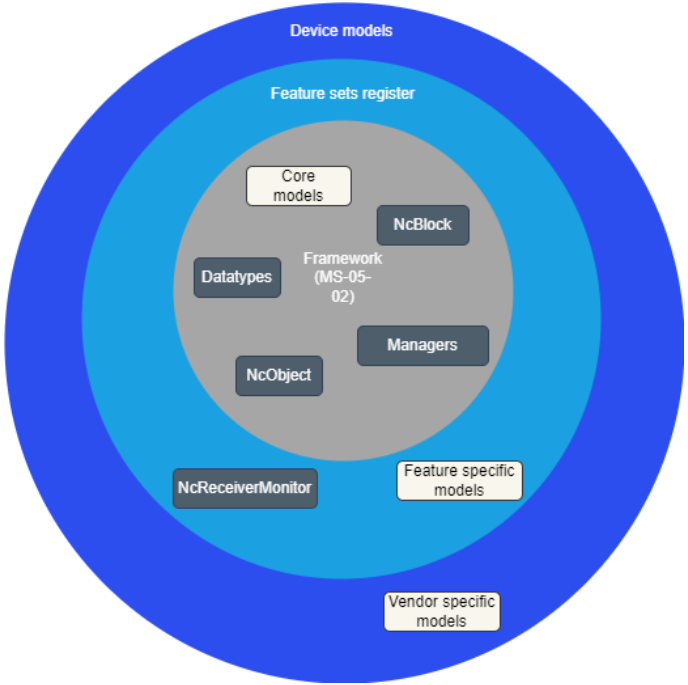
Tangible

Comprehensive test suite covering:

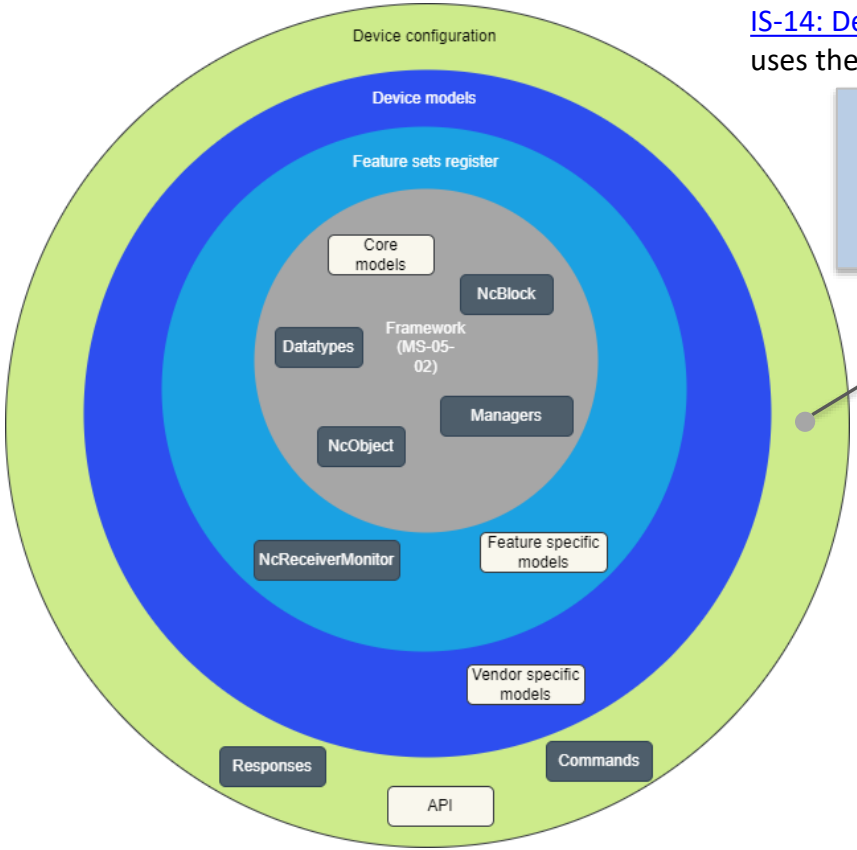
- MS-05-02 framework core model conformance
- IS-12 conformance including commands, responses, subscriptions, notifications and error reporting
- Feature sets model conformance testing where we can opt in each individual feature set through configuration
- Behaviour testing for specific features defined in a BCP (BCP-008-01/02)
- Vendor specific models to ensure compatibility and interoperability

Modular

Creating a multi layered solution means we can mix and match to best address the target user stories.



Modular

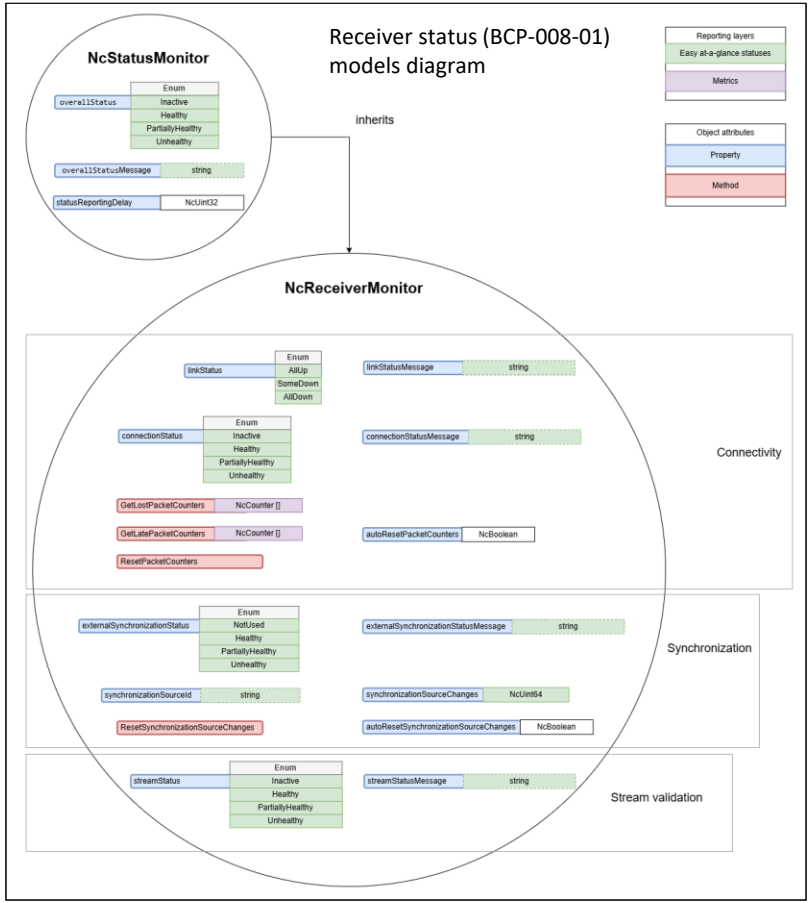


IS-14: Device configuration

uses the same underlying modelling language

HTTP based API with an emphasis on **retrieval** and **restoring** of configuration for backup, restore and other provisioning scenarios

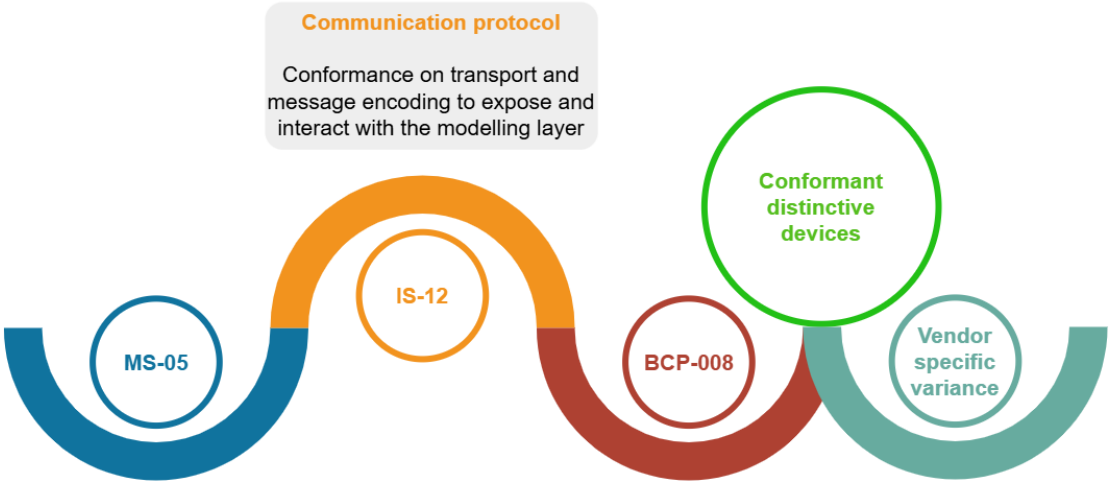
Models solve problems



Industry bodies, system integrators, problem solvers need to be able to describe a problem and solution requirements using a modelling language which **feels natural**.

The solution models are published by a communication protocol which is an enabler.

Conformance strategy



Multi level interoperability

Devices achieve interoperability at different levels:
- modelling: end users and client apps can discover minimum levels of functionality across a domain
- comms: client apps need just 1 integration to interact with multiple vendors
- behaviour: end users know that their fleet of devices operates within the same domain rules where appropriate

whilst still catering for vendor specific variance

NMOS Control & Monitoring